

inviting. Such copies may be taken in a blank book suited to the purpose, or better, take them on single sheets of uniform size, as in this way imperfect copies may be thrown out, and when the work is completed they may be named, classified and bound, making a volume of real value and worthy of just pride. I would esteem it a favor as well as a pleasure to hear personally from any who may employ this method in any way the coming season, concerning the progress of their work, with its attendant imperfections and successes.—HORACE M. ENGLE, *Marietta, Pa.*

A method of staining Peziza specimens.—Decolorize the Pezizæ by soaking in a solution of corrosive sublimate (1 to 2000 Aq. Dist.). Wash from precipitated calomel by agitation in distilled water. Macerate in 90 per cent. alcohol for twenty-four hours. For immediate examination, lower for a few seconds in a strong hæmatoxylin solution, wash in distilled water; or, if preferred, use the dilute hæmatoxylin fluid. (See Campbell, *ante*, p. 40.)—CHARLES E. FAIRMAN.

A visit to Washington.—A brief visit to the capital of the country recently gave an opportunity of inspecting some of the botanical work in progress under the auspices of the government, a short account of which may interest others.

The casts of fruits, vegetables and fungi, naturally colored, with other material illustrative of the vegetable kingdom, first attract the attention of the visitor, as he passes through the museum on the second floor of the Agricultural Building on his way to the herbarium. Entering the herbarium one is pleasantly greeted by the head of the Botanical Division, Dr. Vasey. During his fifteen years of service the botanical work of the department has expanded and developed new features, giving rise to two lusty offshoots, the Forestry Division and the Section of Vegetable Pathology.

The large double room of the herbarium is lined with tall cases filled with the 200,000 sheets, or so, of mounted specimens, with tables and low cases in the center for bulky specimens. In this room also are the desks of the assistants. The division is fortunate in having recently secured the services of Mr. Crozier, of Michigan, who is now engaged in preparing a catalogue of the North American desiderata. This will be heartily appreciated by the botanists of the country, enabling them to contribute desirable material, as they have long expressed a willingness to do, when they should be informed of the needs of the herbarium.

On the next floor above are the rooms of the Forestry Division. The work here does not profess to be botanical, but as it deals with trees, many of the problems being treated biologically, and employs several eminent botanists in the field, the botanists of the country will naturally take an interest in the work and its results. Mr. Sudworth, of Michigan, has recently been appointed assistant.

Adjoining rooms are occupied by the Section of Plant Pathology, under the care of Prof. Scribner. We found various diseased and injured parts of plants lying about, awaiting study. This work having but recently been begun the library and collections are small, but they are well selected and thoroughly indexed. The microscopic and other appliances show an appreciation of good tools. This room and the one on the floor above, occupied by the assistant, Mr. Erwin Smith, also of Michigan, have but lately become available for this use, being formerly occupied by the statistician, who now has rooms in the new seed building not far distant. Mr. Smith was working on diseases of potatoes, and other matters, carrying on cultures and making microscopic examinations.

On the upper floor are also the rooms belonging to the Bureau of Animal Industry; the one for the culture of bacteria, presided over by Dr. Theobald Smith may properly be considered to be partially botanical. There were the various appliances for thorough bacteriological work, and yet the rooms and furnishings are by no means as good as the importance of the subject should warrant. It is fortunate that pine tables and battened doors do not detract from the accuracy of scientific results secured in their presence.

In a broad gallery of the National Museum is another botanical quarter. There is a large herbarium here also, including American and foreign plants arranged in a single series, put up in a similar way to those at the Agricultural Department. But the chief interest lies in the work on fossil plants. Several workers are engaged under Prof. Ward in indexing the literature of the subject, which is put in card-catalogue form for the present, but eventually is to be printed. The amount of labor required is enormous, but the results will be of inestimable value to future workers. Series of specimens which are being studied are arranged in drawers. These are carefully selected, and then passed into the hands of assistants, who make drawings of them, working out with much patience every detail of the structure which the rock can be made to furnish. The weight of the specimens and the indistinctness of the impressions make the drawings desirable for comparison and study, while the specimens are always at hand for verifying doubtful points. Proofs of the plates to be used in the volume on the Types of the Laramie Flora, which is now in press, showed fine work, and some interesting features in photogravure.

In a room still higher up we met Mr. Knowlton studying the microscopic structure of fossil wood, the first work in this branch of paleobotany that has been done in a systematic way in this country. It is a surprise to find how perfectly the structure of some silicified woods is preserved, the drawings appearing as if taken from living plants. The preparation of the sections for study is not difficult, but consumes time; however the study is a fascinating one.

Lack of time permitted only a cursory inspection of these several centers of botanical activity, a glance into the plant houses at the Agricultural Department, and a sight of the Botanic Garden from the distance; and it may be that other botanical attractions in the city were entirely overlooked. Enough, however, was seen to make it clear that Washington contains many elements of botanical interest, and that valuable botanical work is being done there, directed by a coterie of genial botanists. Let fellow scientists pay the city a visit whenever convenient to do so, and they will be amply rewarded.—J. C. A.

EDITORIAL.

THE TWO EXTREMES of botanical teaching are frequently referred to. They may be called the ancient and the modern, and neither alone is productive of the best results. The subject is a much discussed one, but is never decided, the chief result being a settling down to some intermediate position which is likely to be the right one. When two methods of teaching have their acknowledged advantages, and when the only disadvantage of either is that it lacks the other, it would seem that the best method would be to combine the two, and thus obtain all the advantage and eliminate all the disadvantage. The ancient method gives a wide range of acquaintance with external forms, a general knowledge of the plant kingdom and its affinities, a living interest in the surrounding flora; but it disregards the underlying morphology of minute structures and chemical processes, the great principles which bring plant life into one organic whole. The modern method, on the contrary, takes a few types, carefully examines their minutest structures and life work, and grounds well in general biological principles; but it loses the relation of things, as well as any knowledge of the display of the plant kingdom in its endless diversity, and worse than all for the naturalist, cultivates no love for a flora at hand and inviting attention. The former is the method of the field, the latter of the laboratory. The wise teacher will adopt both methods and thus avoid the greatest disadvantage of either. The most natural way of combining the two seems to be to begin with the old method, an unrivalled one in awakening enthusiastic interest and kindling the naturalists' fire, and then to lead to the other. What naturalist has not begun with the fever for collecting? And to what more natural impulse in the young can appeal be made? Theoretically, the science of botany may be said to best begin with the study of protoplasm or *Protococcus*, but the natural order of the human mind in approaching the subject may be different. We venture to make the assertion that no competent teacher of botany is ever satisfied with the results from using one method